SOME SARGINAE COLLECTED IN SOUTH INDIA

(DIPTERA, STRATIOMYIDAE)

MAURICE T. JAMES, *State College of Washington, Pullman.*

The present paper is based on collections made by P. S. Nathan in South India and either purchased by the author or supplied to him for study by the Canadian National Museum through the courtesy of G. E. Shewell. The study of this material has aided considerably in clarifying the taxonomic status of some poorly known species; it has provided material for proposing a new synonymy, previously suspected but not confirmed, involving a well-known and widely distributed species; and, finally, it has revealed two striking generic intergrades, one of which is a species apparently new to science.

Microchrysa flaviventris (Wiedemann)

Sargus flaviventris Wiedemann, 1824, Anal. Ent., p. 31.

The status of the Oriental *Microchrysa* in which the males have a unicolorous yellow abdomen is unsettled, but the common Indian species seems to be *flaviventris*. I have seen a series from Gudalur, Nilgiri Hills, 3500′, April, 1949 (Nathan; James Coll.) and a female from Kodaikanal, Pulney Hills, May, 1953 (Nathan; Canadian National Collection). Information on the types of *M. flaviventris* and *M. fuscistigma* de Meijere furnished to me through the courtesy of S. L. Tuxen and Br. Theowald, respectively, indicates that the discal cell is completely developed in both, contrary to what I had previously thought (James, 1950, p. 254); and in a series from Bangkok, Thailand, Sept. 9, 1952 (M. H. Griffith; Univ. Kansas Collection), two males and one female had the discal cell complete, whereas one male had the vein forming the upper apical portion evanescent. This latter character, therefore, is apparently not of specific value.

Microchrysa dichoptica, new species

A typically appearing *Microchrysa* in all aspects except that the eyes of the male are widely separated. The female might, on first examination, be taken for *M. flaviventris*, but the legs are entirely yellow and the head structure is different, the occipital orbits being more strongly developed below and the inner posterior corners of the eyes, when viewed dorsally, being almost angulate instead of broadly rounded, as in *flaviventris*. In Brunetti's (1923) keys this species would trace to the genus *Sargus* because of the dichoptic males; under *Sargus* it would trace to *inficitus* Walker, from Batjan, a yellowish species marked with black and, as Brunetti remarks, probably a *Microchrysa*, since Walker describes it as having holoptic males (the type is lost); under *Microchrysa* it traces either to *fuscistigma* or to *flaviventris*, depending on whether one considers the stigma as brown or yellow. Both *fuscistigma* and *flaviventris* males are holoptic, with the abdomen at least mostly yellow.

Male.—Eyes broadly separated, the front and face almost parallel sided, the latter but slightly the broader, about one-fifth head width and slightly wider than the ocellar triangle. Occipital orbits narrow, though distinct, along their entire extent. Head metallic, blue green on upper part of front and upper occipital orbits, blackish dulled by whitish pollen on lower third of front, bronze-green on the face, and blackish on the occiput and lower occipital orbits; facial orbits silvery; pile of upper part of front and occiput whitish, that of lower part of front and facial orbits silvery. Antennae yellow, the flagellum orange-yellow; arista black. Proboscis yellow. Thorax metallic bluish green, the pleura slightly more blackish, the humeri and the narrow upper margin of the mesopleura white; pile of pleura silvery, that of mesonotum yellowish-white. Legs wholly yellow and yellow pilose; at most the last last segment of the hind tarsi blackish. Wings hyaline, the stronger veins brownish; venation altogether typical of the genus; stigma brownish; the veins forming the discal cell all strong; M_1 weak; M_3 but little more than a fold in the membrane. Halteres yellow. Abdomen about as broad as thorax; its color blackish green, like that of the thoracic pleura; pile white ventrally, the more conspicuous dorsal pile white to yellowish white but overlying an inconspicuous, short, black pile, especially medially. Genitalia orange-yellow, the capsule large and projecting. Length, 4 mm.

Female.—Front gradually widening from face to vertex; ratio to width of head in allotype 0.24 across oral margin, 0.28 at antennal base, and 0.35 at vertex; viewed from above, the posterior corners of the eyes distinctly angulated. Lower parts of front bluish green, purplish in certain lights. Abdomen distinctly broader than thorax. Otherwise, except sexually, as described for the male.

Types.—Holotype, male, Kodaikanal, Pulney Hills, 6500′; South India, Nov. 9, 1953 (P. S. Nathan). Allotype, same data but May, 1953. Paratypes: male, same data but Oct. 15, 1953; two females, same data but May 28, 1953, and May, 1953. Type in the Canadian National Collection.

Sargus metallinus Fabricius

Sargus metallinus Fabricius, 1805, Syst. Antl., p. 258.

Sargus mactans Walker, 1860, Proc. Linn. Soc. London, 4: 97; Brunetti, 1923, Rec. Indian Mus. 25: 156; James, 1948, Proc. U. S. Nat. Mus. 98: 198 (possible synonymy with *metallinus*); James, 1950, Jour. Washington Acad. Sci. 40: 254. (New synonymy)

Sargus redhibens Walker, 1860, Proc. Linn. Soc. London, 4: 97; Lindner, 1937, Ann. Mag. Nat. Hist. (10)20: 375 (synonymy with *mactans*).

Sargus concisus Walker, 1861, Proc. Linn. Soc. London, 5: 273; Brunetti, 1923, Rec. Indian Mus., 25: 155 (synonymy with *redhibens*).

The references cited in the above synonymy are not intended to be exhaustive, but merely to give authority for the names used, for their synonymy, and for the statements given in this discussion.

Sargus metallinus, as here defined, is a very widespread and variable species, ranging from Southern China and Okinawa through

India to Ceylon, New Caledonia, and the Solomon Islands. Variability exists in color pattern, color of pile and at least one structural detail. Typical *metallinus* has the legs entirely yellow. In *mactans* the hind tibia is black at its base, and Brunetti states that this is the only way in which it differs from *metallinus*. In *redhibens*, all femora are broadly ringed with black or brown; in *concisus*, according to Brunetti, the brown is deeper and more extensive and the "anterior" (fore and middle, by Brunetti's usage) tibiae and the fore and hind tarsi are also distinctly brownish or brown. According to Lindner, Solomon Islands males are *mactans* and females are *redhibens;* James has confirmed this observation but has added that series from Singapore, India, and the Philippine Islands, in the United States National Museum, contain both sexes of both *mactans* and *redhibens*. Leg coloration, consequently, is highly variable. The coloration of the head pile is, also, variable. In the *mactans* and *redhibens* forms, as well as in typical *metallinus*, the pile is usually yellow on the vertex and face but black or blackish on the front; all these areas may have wholly or predominantly black or blackish pile, or certain males, with their subcontiguous eyes, may have the pile color of the front merely gray. The type of *concisus* according to Brunetti, is apparently lost and the specimen (named by Walker) which he described is headless; consequently the color of the head pile in this form is conjectural, but the specimen from Kodaikanal which I am referring to this form has the pile in all the above mentioned areas black. One quite obvious variable structural character is the width of the front in the male. In *metallinus* the front is commonly very narrow, its minimum width being much less than the diameter of the anterior ocellus; this area may be so narrow that the metallic coloration of the front is obscured or lost. In the *mactans* and *redhibens* forms the front may, likewise, be narrow, but it may also broaden to as much as twice the diameter of the anterior ocellus, and the front is distinctly metallic.

It is possible to recognize five more or less indistinctly defined forms of this species: typical *metallinus*, with wholly yellow legs, pale facial and vertical pile, and a very narrow frons in the male, widespread in the Oriental Region but so far not recorded for the Australian Region; *mactans*, indistinguishable from *metallinus* except for the black base of the hind tibia and a tendency toward a broader front in the male, in its distribution extending farther south than *metallinus*, to New Guinea and the Solomon Islands; *redhibens*, in which the femora are banded or marked with black or blackish and the hind tibiae are either black at the base or wholly yellow, in its distribution coextensive with *mactans; concisus*, a melanic form with predominantly black or blackish legs and black facial and frontal pile, that occurs irregularly in the Oriental Region; and the unnamed form with white metapleura, described by James from New Caledonia. It is better, at our present stage of knowledge, to consider these merely forms, rather than subspecies, though I feel that ultimately three sub-

species can be defined: *metallinus, mactans* (*redhibens, concisus*) and the New Caledonia form, the former two intergrading and hybridizing in zones of contact.

Such a zone of contact seems to occur in South India. A series of eight males and females from Kodaikanal, Pulney Hills, 6500′, IV-1953, V-1953, and 28-V-1953 (Nathan; Canadian National Collection) are typical *metallinus* but one female, same data, has the legs entirely black except knees, apices of coxae, and trochanters and has the head pile black, and one male, same data, has black-ringed hind femora and black bases to the middle and hind tibiae, black vertical and predominantly black facial pile, and a widened front. Two males from Walayar Forest, S. Malabar, 1000′, 31-VII-50 (Nathan; James Coll.) are typical *metallinus*, but a female in the same series has black facial pile. Twelve males and seven females from the Nilgiri Hills, Singara, 3400′, V-1954 (Nathan; Canadian National Collection); Gudalur, 3500′, IV-1949, Singara, 3400′, V-1948, and Chirangoda, 3500′, 3-V-1950, X-1950 (Nathan; James Coll.) are intermixed typical *metallinus*, *mactans*, and *mactans* grading toward *redhibens*, and with varying frontal width and, to an extent, head pile. A series of eight males and females from Ammatti, 3100′, S. Coorg, V-1951, is comparable, with the same three variants and with the extremes of male frontal width present.

Ptecticus cingulatus Loew.

Ptecticus cingulatus Loew. 1855, Verh. Zool.—Bot. Ver. Wien, 5: 143. Brunetti, 1923, Rec. Indian Mus., 25: 143.

The synonymy is given by Brunetti and is not repeated here.

Specimens from South India may not trace readily through Brunetti's key, since the hind femora may be considered wholly yellow, the dark streak mentioned by Brunetti being very obscure or absent. This species is apparently abundant in some localities in South India, as I have seen more than a hundred specimens from Singara in the Nilgiri Hills.

Ptecticus australis Schiner

Ptecticus australis Schiner, 1868, Novara Reise, Dipt., p. 65; Brunetti, 1907, Rec. Indian Mus., 1: 113; Brunetti, 1920, Fauna British India, Diptera Brachycera, I, p. 79; Brunetti, 1923, Rec. Indian Mus., 25: 148.

This species, which looks like a miniature *cingulatus* but is different structurally and in leg coloration, is also apparently common in the Nilgiri Hills. I have seen about 50 specimens from that area, in addition to the following South Indian material in the Canadian National Collection: 1 male, Kodaikanal, Pulney Hills, May, 1953; 1 male, Yercaud, 4500′, Shevaroy Hills, Dec., 1954. In the South Indian specimens which I have examined the hind basitarsus is black only at its extreme base; otherwise, Schiner's description fits quite well.

Ptecticus aurobrunneus Brunetti

Ptecticus aurobrunneus Brunetti, 1920, Fauna British India, Dipt. Brachycera, I, p. 76; Brunetti, 1923, Rec. Indian Mus., 25: 139.

This species was described from a unique male from Cochin State. I have examined 5 males, Singara, 3400′, Nilgiri Hills, V-1948, ex rotting pomelo (Nathan; James Coll.); 1 male, same data but V-1954 (Canadian National Collection); and 3 males, Kodaikanal, Pulney Hills, 6500′, V-1953 (Canadian National Collection). These series agree with Brunetti's description except for the characterization of the golden thoracic and abdominal pile; Brunetti says this is "dense though inconspicuous" on the mesonotum, but this statement depends on the light incidence, the pile being quite conspicuous when viewed from in front; the abdominal golden pile, also, as well as the black patches mentioned by Brunetti, is clearly visible from in front, contrary to Brunetti's statement, but not from behind. The legs may be more extensively blackish than indicated in the original description. Brunetti's statement "genitalia and vertex dark brown" is obviously a lapsus for "genitalia and venter." One of the Kodaikanal specimens has the wings yellow, like the basal part of those of *wulpii*, and with only a little brownish along the lower apical margin. The relationship of *aurobrunneus* and *wulpii* is very close; the male genitalia seem to be identical.

The female of this species has not been described. A female, Tinghawk, Burma, June 4, 1944 (L. C. Kuitert; Univ. Kansas Collection) seems to belong here, but there are no associated males. It is the size and general appearance of *aurobrunneus;* the frons is a little broader, as would be expected in this sex; the abdomen is broader, the first four terga wholly black, the fifth discolored brown, the apical segments rich brown as in the male.

Ptecticus wulpii Brunetti

Ptecticus wulpii Brunetti, 1907, Rec. Indian Mus., 1: 111; 1913, Rec. Ind. Mus., 9: 263; 1920, Fauna British India, Diptera Brachycera I, p. 77; 1923, Rec. Indian Mus., 25: 139

Ptecticus apicalis Wulp, 1885, Notes Leyden Mus., 7: 62; de Meijere, 1916, Tijd. Ent., 58, suppl. 70, note. Not *apicalis* Loew, 1855, Verh. Zool.—Bot. Ver. Wien, 5: 142.

Brunetti described this species from three males and one female from four localities, one of them the Nilgiri Hills. In his 1923 paper he stated that this species was readily recognizable "by the all black 5th and 6th abdominal segments in conjunction with the all orange genitalia," and in his key he includes as an accessory character, couplet 5, "wing tip suffusion beginning at or immediately beyond discal cell." This latter statement conflicts with the Fauna of British India key, which separates *wulpii* partly on the basis of "wings clearly yellow up to half-way between discal cell and wing tip."

I am referring to this species two males from the Nilgiri Hills, Singara, 3400′, V-1948 (Nathan; James Coll.). In both of them, the infumated wing apex starts considerably beyond the apex of the discal cell; in one of them the fifth and sixth abdominal segments are wholly black except for a small, unsymmetrically placed spot on each segment, whereas in the other the sixth segment is wholly brownish orange dorsally and the fifth segment is black only at the base.

Ptecticus cyaneus Brunetti

Ptecticus cyaneus Brunetti, 1912, Rec. Indian Mus. 7: 453; Brunetti, 1920, Fauna Brit. India, Diptera Brachycera, I, p. 75; Brunetti, 1923, Rec. Indian Mus. 25: 151.

Brunetti records but two known specimens of this species, both females: the type from Assam, and a specimen from the Nilgiri Hills. I have a female, Chirangode, Nilgiri Hills, 3500′, May, 1950 (Nathan) that seems to be this species. The appearance is strikingly close to that of a large, rather robust specimen of *Sargus mactans* form *concisus*, but the two characters usually used to distinguish *Ptecticus*, namely the strong projection of the second antennal segment inwardly into the third and the absence of a strap-like prolongation on the lower (thoracic) squama, hold for this species. The venation is not very unlike that of *S. mactans*, and the anterior ocellus, as in most species of *Sargus*, is far removed from the hind pair. A striking character is the slender form and elongation of the hind tarsus, which is 1.5 as long as the hind tibia, the greater part of the length being in the basitarsus, which is seven-eighths the length of the tibia.

This species is probably best retained in *Ptecticus*, but it is obviously an intergrade between this genus and *Sargus;* whether by convergence or phylogenetic relationship is a matter of speculation. It is noteworthy that the second antennal segment of *Sargus mactans* may be convex inwardly, but not strongly prolonged, as in *P. cyaneus*. *Sargus gemmifer* Fabricius, which Brunetti refers to *Ptecticus* in the "Second Revision" (1923) though not in the Fauna of British India, belongs as clearly in *Sargus* as does *S. mactans*.

References

Brunetti, E., 1920. The Fauna of British India. Diptera, Brachycera. Vol. I. Pp. x + 401. London.

————, 1923. Second revision of the Oriental Stratiomyidae. Rec. Indian Mus. 25: 45-180.

James, Maurice T., 1950. The Stratiomyidae (Diptera) of New Caledonia and the New Hebrides with notes on the Solomon Islands forms. Jour. Washington Acad. Sci. 40: 248-260.